

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



10/524492



(43) International Publication Date
26 February 2004 (26.02.2004)

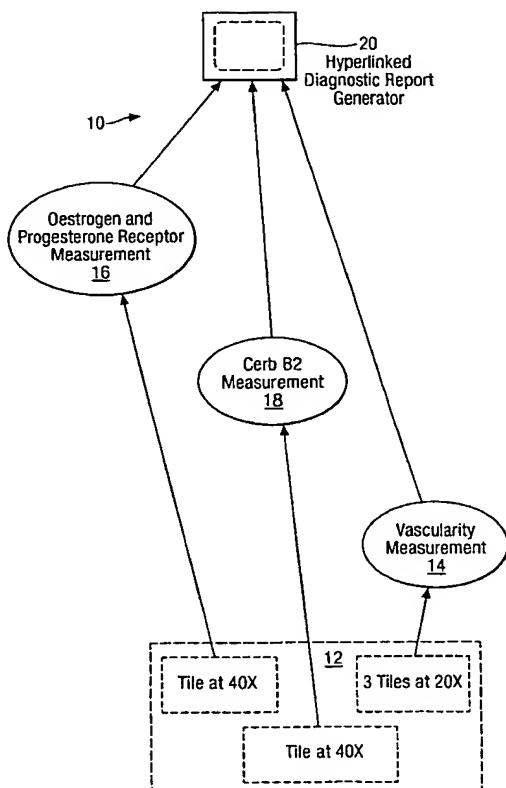
PCT

(10) International Publication Number
WO 2004/017052 A2

- (51) International Patent Classification⁷: G01N 15/10, G06F 19/00
- (21) International Application Number: PCT/GB2003/003465
- (22) International Filing Date: 8 August 2003 (08.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0218909.0 15 August 2002 (15.08.2002) GB
0219271.4 19 August 2002 (19.08.2002) GB
0222035.8 23 September 2002 (23.09.2002) GB
0222218.0 25 September 2002 (25.09.2002) GB
- (71) Applicant (for all designated States except US): QINETIQ LIMITED [GB/GB]; Registered Office, 85 Buckingham Gate, London SW1 6PD (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HAMER, Michael, John [GB/GB]; Building EX, Room 12, QinetiQ Malvern, St Andrews Road, Malvern, Worcs. WR14 3PS (GB). PETROU, Maria [GB/GB]; School of Electronics Computing and Mathematics, University of Surrey, Guildford GU2 7XH (GB). KESIDIS, Anastasios [GR/GR]; Sevastopoulou 25, 11524 Athens (GR). VARGA, Margaret, Jai [GB/GB]; QinetiQ Malvern, Building E, Room 302, St Andrews Road, Malvern, Worcs WR14 3PS (GB).
- (74) Agent: WILLIAMS, A., W., S.; IP QinetiQ Fromalities, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,

[Continued on next page]

(54) Title: HISTOLOGICAL ASSESSMENT



(57) Abstract: A method of measuring oestrogen or progesterone receptor (ER or PR) comprises identifying in histopathological specimen image data pixel groups indicating cell nuclei, and deriving image hue and saturation. The image is thresholded using hue and saturation and preferentially stained cells identified. ER or PR status is determined from normalised average saturation and proportion of preferentially stained cells. A method of measuring C-erb-2 comprises correlating window functions with pixel sub-groups to identify cell boundaries, computing measures of cell boundary brightness and sharpness and brightness extent around cell boundaries, and comparing the measures with comparison images associated with different values of C-erb-2. A C-erb-2 value associated with a comparison image having similar brightness-related measures is assigned. A method of measuring vascularity comprises deriving image hue and saturation, producing a segmented image by hue and saturation thresholding and identifying contiguous pixels. Vascularity is determined from contiguous pixel area corresponding to vascularity expressed as a proportion of total image area.

WO 2004/017052 A2